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EXAMINER	
EWART, JAMES D	

ART UNIT	PAPER NUMBER
2683	

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/845,620	FAYESKI ET AL.	
	Examiner	Art Unit	
	James D Ewart	2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Amendment A filed 07 May 2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14* is/are allowed.

6)☒ Claim(s) *1-13 and 15-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Arguments

1. Objection to the specification on page 3, Brief Description of the ***Drawing***" should be "Brief Description of the ***Drawings***" was incorrectly modified.

2. Objections to claim 13, was incorrectly modified.

3. Objection to claim 14 is withdrawn.

4. The applicant's arguments regarding prior art rejections, filed 07 May 2004, have been fully considered by the Examiner, but they are not deemed to be persuasive. Applicant argues that Jachowski teaches minimal tuning and not in response to tuning commands as claimed. There is nothing in the claim indicating the extent of the tuning and the fact that Jachowski teaches "up to now it has been impossible to remotely make corresponding changes in the resonant frequencies of the various cavities of a transmitter combiner. Therefore, whenever it has been advantageous to reassign channel frequencies, it has been necessary for a technician to travel to the antenna site and manually tune the cavities to the newly assigned transmitter frequencies..... It is another object of the invention to provide a transmitter combiner with the capability of having its transmitter signal frequencies remotely changed without the necessity of manually retuning the resonant frequencies of the corresponding cavities of the transmitter combiner." (Column 1, Lines 61 to Column 2, Line 21) most clearly indicates tuning the cavity. Regarding the tuning commands, Examiner equates microprocessor generated motor control pulses applied to the stepper motor" (Column 2, Lines 58-59) as tuning commands and further

Jachowski teaches "having its transmitter signal frequencies remotely changed" which examiner equates with "receiving tuning commands from a remote location". Although Figure 3 shows the tuning element going in and out of the cavity and column 14, lines 23-26 teach that each step of the stepper motor produces a change of approximately 10 khz and in order to achieve a change in frequency the volume of the cavity must be decreased which would be accomplished with a plate, however the specification doesn't mention making significant changes to the transmission frequency and the tuning element of Jachowski is not shaped like a plate. Therefore, the Examiner will provide new reference and another non-final rejection.

Specification

5. On page 3, "Brief Description of the ***Drawing***" should be "Brief Description of the ***Drawings***"

Claim Objections

6. Claim 13 indicates that it is dependent on claim 13. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 16–20 are rejected under 35 USC 103(a) as being unpatentable over Jachowski (U.S. Patent No. 4,726,071) and further in view of Hicks et al. (U.S. Patent No. 6,160,460) .

Referring to claim 16, Jachowski teaches a cellular base station comprising (Column 6, Lines 2-20): a plurality of transceivers (Figures 1 and 3); a plurality of corresponding power amplifiers coupled to the transceivers (Column 6, Lines 2-20); an antenna (Column 6, Lines 2-20); an autotune combiner network having multiple bandpass cavity filters (Figure 3 and Column 1, Line 64 to Column 2, Line 2), wherein at least one bandpass cavity filter further comprises: a receiver that receives tuning commands from a remote location (Column 2, Lines 16-21 and 58-59 and Column 3, Lines 14-17); a tuning element responsive to the receiver; and a tuning housing responsive to the receiver (Column 3, Lines 6-17), but does not teach tuning plate and telescoping housing. Hicks et al teaches using tuning plate and telescoping housing (Column 3, Lines 15-20). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski with the teaching of Hicks et al. of using a tuning plate and telescoping housing to provide an improved cavity filter which tunes itself to any frequency presented to its input (Column 3, Lines 15-20). Examiner equates what moves the plate in the cavity with the telescoping tuning housing.

Referring to claim 17, Jachowski further teaches a stepper motor coupled to the tuning element for moving the tuning element responsive to the receiver to change Q of the bandpass cavity filter (Figure 1; 11-1 and Column 2, Lines 38-44 and Column 14, Lines 25-26), but does not teach using a tuning plate. Hicks et al teaches using a tuning plate (Column 3, Lines 15-20).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski with the teaching of Hicks et al. of using a tuning plate to provide an improved cavity filter which tunes itself to any frequency presented to its input (Column 3, Lines 15-20).

Referring to claim 18, Hicks et al further teaches a coupling tuner coupled to the cavity of the bandpass cavity filter for adjusting the Q of the bandpass cavity filter (Column 2, Lines 41-49).

Referring to claim 19, Hicks et al further teaches a tuning motor coupled to a tuning actuator for changing the length of a neck in the cavity filter (Column 3, Lines 15-20 and Column 7, Lines 9-15).

Referring to claim 20, Jachowski further teaches a feedback loop for fine tuning the bandpass characteristics of the bandpass cavity filter (Column 2, Lines 38-44).

8. Claims 1 – 7 and 15 are rejected under 35 USC 103(a) as being unpatentable over Jachowski in view of Hicks et al. in further view of Turunen et al (U.S. Patent No. Re. 34,898) and further in view of Mazur et al. (U.S. Patent No. 6,463,054)

Referring to claims 1 and 15, Jachowski teaches a bandpass filter (Column 2, Lines 39-43) for a transmission system (Column 2, Lines 22-23 and Column 6, Lines 13-15) comprising: a

cavity capable of resonating at a first frequency (Column 2, Lines 34-46), when cavity parameters are in a set of first conditions (Column 2, Lines 34-46), and at a second frequency, when the cavity parameters are in a set of second conditions (Column 2, Lines 34-46); a movable facility within the cavity for selectively affecting the condition of the parameters of the cavity pursuant to the respective positions thereof (Figure 1; 10); and apparatus for selectively moving the movable facility (Figure 1; 11-1) and adjusting parameters in response to a signal from a remote location (Column 2, Lines 19-22) but does not teach significantly altering the center frequency. Hicks et al teaches significantly altering the center frequency (Column 2, Lines 41-50 and Column 2, Line 64 to Column 3, Line 6). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski with the teaching of Hicks et al. of significantly altering the center frequency to provide an improved cavity filter which tunes itself to any frequency presented to its input (Column 3, Lines 15-20). Jachowski and Hicks et al. teach the limitations of claims 1 and 15, but do not teach altering the bandwidth of the cavity. Turunen et al teaches altering the bandwidth of the cavity (Column 7, lines 55-62). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski and Hicks et al. with the teaching Turunen et al teaches altering the bandwidth of the cavity in order to change the frequency response of the filter (Column 4, Lines 34-36). Jachowski, Hicks et al. and Turunen et al teach the limitations of claims 1 and 15, but do not teach operating with different communication protocols that require different frequencies. Mazur et al teaches operating with different communication protocols that require different frequencies (Column 3, Lines 25-29). Therefore at the time the invention was made, it would

have been obvious to a person of ordinary skill in the art to combine the art of Jachowski with the art of Mazur et al of operating with different communication protocols that require different frequencies to enable the introduction of data services in current generation systems (Column 1, Lines 22-23) and to obtain cell specific information necessary for correct communication (Column 2, Lines 37-38).

Referring to claim 2, Jachowski further teaches wherein: the affected parameters are bandpass Q and insertion loss (Column 1, Line 59 to Column 2, Line 2; Column 2, Lines 39-43; and Column 3, Lines 10-17).

Referring to claim 3, Hicks et al further teaches wherein: the movable facilities include an electrically conductive plate movable within the cavity to change the length and, therefore, the Q thereof (Column 3, Lines 15-20).

Referring to claim 4, Jachowski further teaches wherein: the movable facilities include a non-air dielectric element movable within the cavity to alter the Q thereof (Column 1, Line 59 to Column 2, Line 2; Column 2, Lines 39-43; and Column 5, Lines 51-59).

Referring to claim 5, Hicks et al further teaches wherein: the movable facilities include an electrically conductive plate movable within the cavity to change the length and, therefore, the Q thereof (Column 3, Lines 15-20)).

Referring to claim 6, Jachowski further teaches the affected parameter is center frequency, Turunen et al teaches the affected parameters are bandpass characteristic (Column 7, lines 55-62).

Referring to claim 7, Mazur et al further teaches wherein: the broadcast protocols are AMPS/TDMA at 30 kHz and EDGE at 200 kHz (Column 2, Lines 4-17 and Column 4, Lines 25-41).

9. Claims 8, 12, and 13 are rejected under 35 USC 103(a) as being unpatentable over Jachowski in view of Hicks et al. in view of Turunen et al (U.S. Patent No. Re. 34,898) in view of Mazur et al. and in further view of Marchetto et al. (U.S. Patent No. 5,418,818)

Referring to claim 8, Jachowski teaches in a cellular telephone system having a base station which includes an antenna and two transmitters (Figure 1, Figure 3, and Column 6, lines 2-20) a bandpass filter for connecting the antenna to the transmitters (Figure 1), which comprises: a cavity capable of resonating at a first frequency (Column 2, Lines 34-46), when the parameters thereof are collectively in selected first conditions (Column 2, Lines 34-46 and Column 14, Lines 24-26), and at a second frequency, when the parameters thereof are collectively in selected second conditions (Column 2, Lines 34-46 and Column 14, Lines 24-26), one or more movable facilities within the cavity for selectively affecting the condition of the parameters of the cavity pursuant to the respective positions thereof (Figure 1; 10); and apparatus for selectively moving the movable facilities (Figure 1; 11-1), but does not teach significantly

altering the center frequency. Hicks et al teaches significantly altering the center frequency (Column 2, Lines 41-50 and Column 2, Line 64 to Column 3, Line 6). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski with the teaching of Hicks et al. of significantly altering the center frequency to provide an improved cavity filter which tunes itself to any frequency presented to its input (Column 3, Lines 15-20). Jachowski and Hicks et al. teach the limitations of claim 8, but do not teach altering the bandwidth of the cavity. Turunen et al teaches altering the bandwidth of the cavity (Column 7, lines 55-62). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski and Hicks et al. with the teaching Turunen et al teaches altering the bandwidth of the cavity in order to change the frequency response of the filter (Column 4, Lines 34-36). Jachowski, Hicks et al. and Turunen et al teach the limitations of claim 8, but do not teach operating with different communication protocols that require different frequencies. Mazur et al teaches operating with different communication protocols that require different frequencies (Column 3, Lines 25-29). Therefore at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski with the art of Mazur et al of operating with different communication protocols that require different frequencies to allow for the introduction of data services in current generation systems (Column 1, Lines 22-23) and to obtain cell specific information necessary for correct communication (Column 2, Lines 37-38). Jachowski and Mazur et al teach the limitations of claim 1, but do not teach adjusting parameters in response to a signal from a remote location. Marchetto et al teaches adjusting parameters in response to a signal from a remote location (Figure 1; 64 and

Column 2, Lines 35-41). Therefore at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Marchetto et al of adjusting parameters in response to a signal from a remote location to be able to set parameters from a remote location (Column 2, Lines 63-64).

Referring to claim 12, Jachowski teaches a cellular telephone base station having plural transmitters (Column 3, Lines 6-17 and Figure 1; 2-1), a group of N bandpass filters phased together (Column 6, Lines 5-12 and Figure 3), each filter comprising: a cavity capable of resonating at a first frequency, when the parameters thereof collectively assume selected first conditions (Column 2, Lines 34-46), and at a second frequency when the parameters thereof collectively assume selected second conditions (Column 2, Lines 34-46), one or more movable facilities within the cavity for selectively affecting the condition of the parameters of the cavity pursuant to the respective positions thereof (Figure 1; 10); and apparatus for selectively moving the movable facilities in response to the receipt of a move command to effect the assumption by the cavity parameters of the first selected conditions or the second selected conditions (Figure 1; 11-1), so that a number, X, of the cavities resonate at the first frequency and N-X of the cavities resonate at the second frequency (Column 3, Lines 6-17), X being from zero through N (Column 3, Lines 6-17), but does not teach significantly altering the center frequency. Hicks et al teaches significantly altering the center frequency (Column 2, Lines 41-50 and Column 2, Line 64 to Column 3, Line 6). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski with the teaching of Hicks et al. of significantly altering the center frequency to provide an improved cavity filter which

tunes itself to any frequency presented to its input (Column 3, Lines 15-20). Jachowski and Hicks et al. teach the limitations of claim 12, but do not teach altering the bandwidth of the cavity. Turunen et al teaches altering the bandwidth of the cavity (Column 7, lines 55-62). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski and Hicks et al. with the teaching Turunen et al teaches altering the bandwidth of the cavity in order to change the frequency response of the filter (Column 4, Lines 34-36). Jachowski, Hicks et al. and Turunen et al teach the limitations of claim 12, but do not teach each transmitter is compliant with one or the other of two respective broadcast protocols using the time division multiple access protocol and the transmitters are connected to an antenna and the antenna's transmission is made up of X/N of the first frequency and (N-X)/N of the second frequency, the antenna accordingly being capable of transmitting from 0% to 100% of each frequency in increments of 1/N%. Mazur et al teaches each transmitter is compliant with one or the other of two respective broadcast protocols (Column 3, Lines 25-29) using the time division multiple access protocol (Column 4, Lines 37-41) and the transmitters are connected to an antenna and the antenna's transmission is made up of X/N of the first frequency and (N-X)/N of the second frequency, the antenna accordingly being capable of transmitting from 0% to 100% of each frequency in increments of 1/N% (Column 4, Lines 37-41). Therefore at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski with the art of Mazur et al each transmitter is compliant with one or the other of two respective broadcast protocols using the time division multiple access protocol and the transmitters are connected to an antenna and the antenna's transmission is made up of X/N of the first frequency and (N-X)/N of the second

frequency, the antenna accordingly being capable of transmitting from 0% to 100% of each frequency in increments of 1/N% to enable the introduction of data services in current generation systems (Column 1, Lines 22-23) and to obtain cell specific information necessary for correct communication (Column 2, Lines 37-38). Jachowski, Hicks et al., Turunen et al and Mazur et al teach the limitations of claim 12, but do not teach adjusting parameters in response to a signal from a remote location. Marchetto et al teaches adjusting parameters in response to a signal from a remote location (Figure 1; 64 and Column 2, Lines 35-41). Therefore at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Marchetto et al of adjusting parameters in response to a signal from a remote location to be able to set parameters from a remote location (Column 2, Lines 63-64).

Referring to claim 13, Jachowski further teaches wherein N=4 and X varies from 0 to 4 (Figure 3). The number of cavities and the distribution of the two protocols for the cavities is a design choice.

10. Claims 9 - 11 are rejected under 35 USC 103(a) as being unpatentable over Jachowski Hicks et al., Turunen et al, Mazur et al. and Marchetto et al. and further in view of Blachier et al (U.S. Patent No. 3,697,898).

Referring to claim 9, Jachowski further teaches wherein: the movable facilities and the selective moving apparatus comprise and a prime mover associated with an element for movement thereof in response to energization thereof (Figure 1), but neither Jachowski, Hicks et

al., Turunen et al., Mazur et al. and Marchetto et al. teach movement of individual elements, each of which affects a parameter of the cavity. Blachier et al teaches movement of individual elements, each of which affects a parameter of the cavity (Figure 1a, 9-14). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the art of Jachowski Mazur et al. and Marchetto et al. with the art of Blachier et al of movement of individual elements, each of which affects a parameter of the cavity to provide steep response skirts for the band pass of a filter (Column 2, Lines 55-56)

Referring to claim 10, Jachowski further teaches each prime mover comprises a selectively energizable electric motor connected to its element and mounted with respect to the cavity so that energization of the motor translates the element (Figure 1).

Referring to claim 11, Jachowski further teaches one or more prime movers may be selectively, individually connected to plural elements by the move command (Column 3, Lines 6-17).

Allowable Subject Matter

11. Claim 14 is allowed. The following is an examiner's statement of reasons for allowance:

Regarding claim 14, the references sited do not teach a dual mode combiner employable to interconnect an antenna to two transmitters each compliant with a respective broadcast protocol, which comprises: a cavity capable of resonating simultaneously at a first frequency and

a second frequency, the first frequency being compatible with one of the broadcast protocols and the second frequency being compatible with the other protocol; one or more first movable facilities within the cavity for selectively affecting the condition of the parameters of the cavity pursuant to the respective positions thereof so that if the capacity of ***the cavity for one of the frequencies is X%, the capacity of the cavity for the other frequency is 100-X%; one or more second movable facilities within the cavity for selectively affecting the condition of the parameters of the cavity pursuant to the respective positions thereof so that the center frequency of the cavity's bandpass characteristics may be adjusted***; and apparatus for selectively moving the movable facilities in response to the receipt of a move command from a location, which is remote from the cavity, to effect the assumption by the cavity parameters of the first selected conditions or the second selected conditions.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ahlberg U.S. Patent No. 6,005,452 discloses fixed tunable loop.

Delzer U.S. Patent No. 3,955,198 discloses radar RF generator including a stable local oscillator and an exciter circuit.

Kaegebein U.S. Patent No. 4,186,359 discloses notch filter network.

Kich U.S. Patent No. 5,796,319 discloses dual mode cavity resonator with coupling grooves.

Mansour U.S. Patent No. 5,200,721 discloses dual-mode filters using dielectric resonators with apreatures.

Woods U.S. Patent No. 6,362,708 discloses dielectric resonator tuning device.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James D Ewart whose telephone number is (703) 305-4826. The examiner can normally be reached on M-F 7am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on (703)308-5318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Ewart
June 9, 2004

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